UNITED STATES PATENT AND TRADEMARK OFFICE

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EXAMINER
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SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

PTOL-90A (Rev. 10/06)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>08 January 2007</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,7-9,11-27 and 29-54* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5, 7-9, 11-27, 29-54* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____.

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Introduction

1.   This action is in response to the amendment filed 01-08-2007. Claims 1-5,7-9,11-

13, 16-26 and 30-46 have been amended and claims 6 , 10 and 28 have been

canceled; and claims 51-54 have been added. Claims 1-5, 7-9, 11-27 and 29-54 are

pending.

Continued Examination Under 37 CFR 1.114

2.   A request for continued examination under 37 CFR 1.114, including the fee set

forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this

application is eligible for continued examination under 37 CFR 1.114, and the fee set

forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action

has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 01-08-

2007 has been entered.

Claim Rejections - 35 USC § 112

3.   The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of
> making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the
> art to which it pertains, or with which it is most nearly connected, to make and use the same and shall
> set forth the best mode contemplated by the inventor of carrying out his invention.

4.   Claim 1 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with

the enablement requirement. The claim(s) contains subject matter which was not

described in the specification in such a way as to enable one skilled in the art to which it

pertains, or with which it is most nearly connected, to make and/or use the invention.

The claim limitation " A method of equalizing output signals from one or more

microphones, the method comprising the steps of:

(a) applying a first predictable noise to a converter having a known transfer function

to convert the first predicable noise to an audio output based on the transfer function of

the converter, and applying the audio output to the microphone without adaptively

modifying the audio output to convert the audio output to a first output noise;

applying a second predictable noise to a compensation filter for compensating for

the known transfer function of the converter, the first and second predictable noises

being synchronized in time by a synchronizer, the compensation filter outputting a

second output noise based on the compensation;

explicitly identifying a transfer function of the microphone based on the

corresponding first and second output noises;

based on a single selected function for the one or more microphones, determining a

filtering function for each signal path the microphone such that the product of the

transfer function and the filtering function is the single selected function; and

__applying the filtering function for the microphone to an equalization filter for the__

__microphone such that a transfer function between the microphone and the equalization__

__filter for the microphone is substantially equal to the single selected function__ " was not

supported in the further detail in the specification nor in any of the claim and the

examiner carefully reads the figs 2a-2b and 3 and specification page 11 line 1 to page

16 line 16. The specification does not teach that <u>applying the filtering function for the</u> <u>microphone to an equalization filter for the microphone such that a transfer function</u> <u>between the microphone and the equalization filter for the microphone is substantially</u> <u>equal to the single selected function.</u>

5.   Claim 16 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The claim limitation " An apparatus for equalizing output signals from one or more microphones, the apparatus comprising:

a module for applying a first predictable noise to a converter having a known transfer function, the converter converting a first predicable noise to an audio output based on the transfer function of the converter,

a module for applying the audio output to the microphone without adaptively modifying the audio output, the microphone converting the audio output to a first output noise; -

a module for applying a second predictable noise to a compensation filter for compensating for the transfer function of the converter, the second predictable noise being synchronized with the first predictable noise by a synchronizer, the compensation filter outputting a second output noise based on the compensation;

a module for explicitly identifying a transfer function of the microphone based on the
corresponding first and second output noises;

a module for determining, a filtering function for the microphone based on a single
selected function for the one or more microphones such that the product of the transfer
function of the microphone and the filtering function is the single selected function; and

<u>a module for applying the filtering function for the microphone to an equalization</u>

<u>filter for the microphone such that a transfer function between the microphone and the</u>

<u>equalization filter for the microphone is substantially equal to the single selected</u>

<u>function</u>" was not supported in the further detail in the specification nor in any of the
claim and the examiner carefully reads the figs 2a-2b and 3 and specification page 11
line 1 to page 16 line 16. The specification does not teach <u>a module for applying the</u>

<u>filtering function for the microphone to an equalization filter for the microphone such that</u>

<u>a transfer function between the microphone and the equalization filter for the</u>

<u>microphone is substantially equal to the single selected function.</u>

6.   Claim 42 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with
the enablement requirement. The claim(s) contains subject matter which was not
described in the specification in such a way as to enable one skilled in the art to which it
pertains, or with which it is most nearly connected, to make and/or use the invention.
The claim limitation " A method of providing sound signals to a user through a system
including one or more microphones, the method comprising steps of:

preparing a filtering function for, each of one or more microphones, including, for each of the one or more microphones, the steps of:

applying a first predictable noise to a converter having a known transfer function, the converter converting the first predicable noise to an audio output based on the transfer function of the converter; applying the audio output to the microphone without adaptively modifying the audio output, the microphone converting the audio output to a first output noise; and

applying a second predictable noise to a compensation filter for compensating for the transfer function of the converter, the first and second predictable noises being synchronized in time by a synchronizer, the compensation filter outputting a second output noise based on the compensation,

explicitly identifying a transfer function of the microphone based on the corresponding first and second output noises; and

determining, the filtering function the microphone based on a single selected function for the one or more than microphones such that the product of the transfer function of the microphone and the filtering function is the single selected function, and

applying the filtering function for the microphone to the corresponding transfer function an equalization filter for the microphone such that a transfer function between the microphone and the equalization filter for the microphone is substantially equal to the single selected function,

operating the system, including the step of: for each of the one or more microphones, transferring a sound signal through the microphone and the equalization

filter for the microphone" was not supported in the further detail in the specification nor

in any of the claim and the examiner carefully reads the figs 2a-2b and 3 and

specification page 11 line 1 to page 16 line 16. The specification does not teach that

   <u>applying the filtering function for the microphone to the corresponding transfer</u>

<u>function an equalization filter for the microphone such that a transfer function between</u>

<u>the microphone and the equalization filter for the microphone is substantially equal to</u>

<u>the single selected function.</u>

7.   Claim 43 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with

the enablement requirement. The claim(s) contains subject matter which was not

described in the specification in such a way as to enable one skilled in the art to which it

pertains, or with which it is most nearly connected, to make and/or use the invention.

The claim limitation "A sound system for one or more microphones for transmitting

sound signals, comprising:

   a converter having a known transfer function; a module for applying a first predictable

noise to the converter, the converter converting the first predicable noise to an audio

output based on the transfer function of the converter; a module for applying the audio

output to the microphone without adaptively modifying the audio output the microphone

converting the audio output to a first output noise; a compensation filter for

compensating for the transfer function of the converter;

   a module for applying a second predictable noise to the compensation filter, including

a synchronizer for synchronizing the first and second predictable noises in time, the

compensation filter outputting a second output noise based on the compensation;

an identification circuit for explicitly identifying a transfer function of the microphone

based on the corresponding first and second output noises; and

a determination circuit for determining, filtering function for the microphone based

on a single selected function for the one or more microphones such that the product of

the transfer function of the microphone and the filtering function is the single selected

function,

the filtering function being applied to an equalization filter for the microphone to

generate the selected function, whereby the sound signals from the sound providing

system are substantially equal with respect to phase or phase and magnitude such that

a transfer function between the microphone and the equalization for the microphone is

substantially equal to the single selected function " was not supported in the further

detail in the specification nor in any of the claim and the examiner carefully reads the

figs 2a-2b and 3 and specification page 11 line 1 to page 16 line 16. The specification

does not teach that the filtering function being applied to an equalization filter for the

microphone to generate the selected function, whereby the sound signals from the

sound providing system are substantially equal with respect to phase or phase and

magnitude such that a transfer function between the microphone and the equalization

for the microphone is substantially equal to the single selected function.

8.   Claims 51-54 are rejected under 35 U.S.C. 112, first paragraph, as failing to

comply with the enablement requirement. The claim(s) contains subject matter which

was not described in the specification in such a way as to enable one skilled in the art to

which it pertains, or with which it is most nearly connected, to make and/or use the

invention. The claim limitation " the one or more microphones comprises at least a first

microphone and a second microphone, and wherein an output signal through the first

microphone and <u>the equalization filter for the first microphone is substantially equal to</u>

<u>an output signal through the second microphone and the equalization filter for the</u>

<u>second microphone with respect to phase or phase and magnitude</u> " was not supported

in the further detail in the specification nor in any of the claim and the examiner carefully

reads the figs 2a-2b and 3 and specification page 11 line 1 to page 16 line 16. The

specification does not teach that <u>the equalization filter for the first microphone is</u>

<u>substantially equal to an output signal through the second microphone and the</u>

<u>equalization filter for the second microphone with respect to phase or phase and</u>

<u>magnitude.</u>

Claim Objections

9.   Claim 39 is objected to under 37 CFR 1.75(c) as being in improper form because

a multiple dependent claim 39 depends on claims 16, 36. See MPEP § 608.01(n).

Accordingly, the claim 39 has not been further treated on the merits.

10.   Claim 40 is objected to under 37 CFR 1.75(c) as being in improper form because

a multiple dependent claim 40 depends on claims 16, 37. See MPEP § 608.01(n).

Accordingly, the claim 40 has not been further treated on the merits.

11.   Claim 41 is objected to under 37 CFR 1.75(c) as being in improper form because

a multiple dependent claim 39 depends on claims 16, 38. See MPEP § 608.01(n).

Accordingly, the claim 40 has not been further treated on the merits.

Claim Rejections - 35 USC § 103

12.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

13.   Claims 1-4, 7-9, 11, 14-19, 22-24, 26, 29-31 and 33-45, 51-54 are rejected

under 35 U.S.C. 103(a) as being unpatentable over Vaughn (US PAT. 5,233,655) in

view of Hamabe (US PAT. 5,426,703).

Consider claim 16 Vaughn teaches that an apparatus for equalizing output signals

from one or more microphones (see fig.1), the apparatus comprising:

a module for applying a first predictable noise (44a white noise) to a converter having

a known transfer function, the converter converting a first predicable noise to an audio

output based on the transfer function of the converter,

a module for applying the audio output (40) to the signal without adaptively

modifying the audio output, the signal converting the audio output to a first output noise;

a module for applying a second predictable noise (44b, pink noise) to a compensation

filter (26) for compensating for the transfer function of the converter, the second

predictable noise (44b) being synchronized with the first predictable noise (44a) by a

synchronizer (45, microprocessor controller, such as cpu), the compensation filter

outputting a second output noise based on the compensation;

a module for explicitly identifying a transfer function (10) of the microphone (20a)

based on the corresponding first and second output noises (44a, 44b);

a module for determining (23), a filtering function for the microphone based on a

single selected function for the one or more microphones such that the product of the

transfer function of the microphone and the filtering function is the single selected

function; and

a module for applying the filtering function (27) for the microphone (20a) to an

equalization filter (28 and see col. 5 lines 9-17) for the microphone such that a transfer

function (24) between the microphone (20a) and the equalization filter (28) for the

microphone is substantially equal to the single selected function (23 and see col.5 line

50-col. 6 line 50); But Vaughn does not explicitly teach a module for applying the audio

output to the microphone, the microphone converting the audio output to a first output

noise.

However, Hamabe teaches a module for applying the audio output to the

microphone (se fig. 1b, 8a-8h), the microphone converting the audio output to a first

output noise (26 white noise and see col. 5 line 31-col.6 line 67).

Therefore, it would have been obvious to one of ordinary skill in the art at the time

the invention was made to include a microphone into each signal path and to include,

into the apparatus of Vaughn, a module for applying a predictable noise to each signal

path to generate the output noise. One of ordinary skill in the art would have been

motivated to combine the teaching of Hamabe into Vaughn because this would have

provided an active noise eliminating system which can correct and update the noise

elimination transfer function for providing a more reliable noise elimination function

without causing noise pressure divergence (Hamabe, col. 2, lines 10-16).

As to claim 1, this is the method claim corresponding to apparatus claim 16. See

previous apparatus claim 16 for rejection.

Consider claim 43 Vaughn teaches sound system for one or more microphones for

transmitting sound signals, comprising:

a converter (see fig.1 (41b, speaker) having a known transfer function;

a module for applying a first predictable noise (44a, white noise) to the converter, the

converter converting the first predicable noise to an audio output based on the transfer

function of the converter;

a module for applying the audio output (40) to the microphone without adaptively

modifying the audio output the microphone converting the audio output to a first output

noise;

a compensation filter (26) for compensating for the transfer function of the converter;

a module for applying a second predictable noise (44b, pink noise) to the

compensation filter, including a synchronizer (45, microprocessor controller, such as

cpu) for synchronizing the first and second predictable noises (44a, 44b) in time, the

compensation filter outputting a second output noise based on the compensation;

an identification circuit for explicitly identifying a transfer function (10) of the

microphone (20a) based on the corresponding first and second output noises (44a,44b);

and

a determination circuit (23) for determining, filtering function for the microphone

(20a) based on a single selected function for the one or more microphones (20a) such

that the product of the transfer function of the microphone and the filtering function is

the single selected function,

the filtering function (27) being applied to an equalization filter (28 and see col. 5

lines 9-17) for the microphone to generate the selected function, whereby the sound

signals from the sound providing system (10) are substantially equal with respect to

phase or phase and magnitude such that a transfer function (24) between the

microphone and the equalization for the microphone is substantially equal to the single

selected function(23 and see col.5 line 50-col. 6 line 50); But Vaughn does not explicitly

teach a module for applying the audio output to the microphone, the microphone

converting the audio output to a first output noise.

However, Hamabe teaches a module for applying the audio output to the

microphone (se fig. 1b, 8a-8h), the microphone converting the audio output to a first

output noise (26 white noise and see col. 5 line 31-col.6 line 67).

Therefore, it would have been obvious to one of ordinary skill in the art at the time

the invention was made to include a microphone into each signal path and to include,

into the apparatus of Vaughn, a module for applying a predictable noise to each signal

path to generate the output noise. One of ordinary skill in the art would have been

motivated to combine the teaching of Hamabe into Vaughn because this would have

provided an active noise eliminating system which can correct and update the noise

elimination transfer function for providing a more reliable noise elimination function

without causing noise pressure divergence (Hamabe, col. 2, lines 10-16).

As to claim 42, this is the method claim corresponding to system claim 43. See

· previous apparatus claim 43 for rejection.

Consider claims 17-18, Vaughn teaches an apparatus of the selected function is the

transfer function (see fig.1, (23)) for one of one the microphones (20a and see col.7 line

1-col.8 line 35); and an apparatus of the selected function is a common factor (such as,

· switching), and wherein the filtering function (27) is determined such that the product of

the transfer function of the microphone (20a) and the filtering function is the common

factor (such as 150HZ and col.5 line 31-col.6 line 67).

As to claims 2-3, these are method claims of claims 17-18 and thus note the

· rejections of claims 17-18, respectively.

⁻ As to claims 44-45, these are system claims of claims 17-18 and thus note the

rejections of claims 17-18, respectively.

Consider claim 19, Vaughn teaches an apparatus of the module for applying the

· filtering function comprises:

a module for loading the filtering function (see fig.1 (27)) to the equalization filter (28 and see col. 5 line 9-17).

As to claim 4, it is the method claim corresponding to apparatus claim 19. See previous apparatus claim 19 for rejection.

Consider claim 22 Vaughn teaches the module for applying a first predictable noise comprises:

a module for applying a first predictable noise signal (see fig.1 (44a)) to the converter (40b), the converter converting the first predicable noise signal (44a)) to a first predictable noise sample based on the transfer function of the converter,

the module for applying the audio output comprises, a module for acoustically providing the first predictable noise sample (44a) to the microphone (20a) with a propagation time delay inherently, the module for applying a second predictable noise (44b) comprises:

a module for providing a second predictable noise signal (44b) to the compensation filter (26), the first and second predictable noise signals (44a,44b) being synchronized in time by the synchronizer (45, microprocessor controller, such as cpu), the compensation filter (26) compensating the second predictable noise signal (44b) for the transfer function of the converter (40b) and outputting the second output noise (44b) based on the compensation (see col. 5 line 32-col. 6 line 67), but Vaughn does not explicitly teach the microphone converting the first predictable noise sample with the propagation time delay to the first output noise.

However, Hamabe teaches the microphone (see fig.1b (8a-8h)) converting the first

predictable noise sample (26 white noise) with the propagation time delay to the first

output noise (see figs 7c-7d and see col. 16 line 6-col. 17 line 11)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to include a microphone into each signal path and to include, into

the apparatus of Gardner, a module for applying a predictable noise to each signal path

to generate the output noise. One of ordinary skill in the art would have been motivated

to combine the teaching of Hamabe into Vaughn because this would have provided an

active noise eliminating system which can correct and update the noise elimination

transfer function for providing a more reliable noise elimination function without causing

noise pressure divergence (Hamabe, col. 2, lines 10-16).

As to claim 7, it is the method claim corresponding to apparatus claim 22. See

previous apparatus claim 22 for rejection.

Consider claim 23-24 Vaughn teaches that the first predictable noise signal is a first

predictable digital noise signal (see fig.1 (44a)), and the second predictable noise signal

is a second predictable digital noise signal (44b), and wherein the apparatus

comprises:

noise generator for generating the first predictable digital noise signal(44a) and the

second predictable digital noise signal (44b and see col. 5 line 32-col. 6 line 67) and the

module for identifying comprises:

a module for delaying (see fig.1, 28 and fig.2) the second output noise (44b) by same

amount (such as, time constants) of time as the propagation delay time (see col. 7 line

27-61); and

a module for processing (28) the first output noise and the delayed second output noise (44a,44b) to estimate the transfer function of the microphone (20a and see col. 5 line 32-col. 6 line 67).

As to claims 8-9, these are method claims of claims 23-24 and thus note the rejections of claims 23-24, respectively.

Consider claim 26 Hamabe teaches that the first converter includes a loud speaker (7a-7d and see col. 5 line 32-col. 6 line 67). Note discussion of claim 16 for a motivation to combine.

Consider claim 29 Hamabe teaches that the propagation delay time is selected to be integer multiple (see equation 1) of the first predictable noise sample (white noise and col. 5 line 32-col. 6 line 67); Note discussion of claim 16 for a motivation to combine.

As to claim 11, it is the method claim corresponding to apparatus claim 29. See previous apparatus claim 29 for rejection.

Consider claims 30-31 Vaughn teaches that apparatus of the first predictable digital noise signal (see fig.1, (44b)) and the second predictable digital noise signal comprises a white noise signal (44a and see col. 5 line 32-col. 6 line 67); and apparatus of each of the first predictable digital noise signal (44b) and the second predictable digital noise signal comprises a random noise signal (44a and see col. 5 line 32-col. 6 line 67).

As to claims 14-15, these are method claims of claims 29 -31 and thus note the rejections of claims 30 -31, respectively.

Consider claims 36-38, note discussion of claim 16 with respect to the apparatus. Vaughn further teaches an apparatus is comprising a listening device / hearing aid (see col. 6 lines 18-29) / headset (see fig.1 (40b)) comprising: one or more microphone (see fig.1, 20a) for transmitting sound signals to a user, outputs from the one or more microphones (20a) being equalized (see fig. 1 (28)) and col. 5 line 35-col. 6 line 67) by the apparatus (see rejection of claim 16).

As to claims 33-35, these are method claims of claims 36-38 and thus note the rejections of claims 36-38, respectively.

Consider claims 39-41, Vaughn teaches a hearing aid (a listening device and a headset and see col. 5 line 50-col. 6 line 29)) comprising:

a signal equalization filter (see fig.1, (28) and col.5 lines 9-17) provided for each of one or more microphones (20a), wherein the function of the signal equalization filter is determined by the signal equalization filter (see fig. 1 (28) and col. 5 line 35-col. 6 line 67).

Consider claims 51-54 Vaughn teaches that the one or more microphones (see fig.1 (20a)) comprises at least a first microphone and a second microphone (20a), and wherein an output signal through the first microphone and the equalization filter (28) for the first microphone (20a) is substantially equal (possibly by adjust 24 program gain amplifier) to an output signal through the second microphone (20a) and the equalization filter (28 and see col. 5 lines 9-17) for the second microphone (20a) with respect to phase or phase and magnitude (44a and see col. 5 line 32-col. 6 line 67).

14.   Claims 5,12-13, 20-21, 25, 27, 32 and 46-48 are rejected under 35 U.S.C.

103(a) as being unpatentable over Vaughn (US PAT. 5,233,665) as modified by

Hamabe (US PAT. 5,426,703) as applied to claims 16 and 43 above, and further in view

of T. Schneider, DG. Jamieson, " A Dual channel MLS-Based Test system for Hearing-

Aid Characterization", J audio Eng. Soc, Vol 41, No.7/8, 1993 July/August, P583-593.

Consider claim 20 Vaughn teaches that an apparatus of the module for applying a

first predictable noise comprises (44a white noise) a noise generator (44a) for

generating a first predictable noise (44a) sample signal noise and providing generating

a second predictable noise sample signal (44b, pink noise), the second predictable

noise (44b) sample signal having a property substantially identical to the first predictable

noise sample signal (44a) and being substantially identical to the first predictable noise

sample signal (44a) on a sample-by-sample basis, the converter (such as 40b ,

speaker) converting the first predicable noise sample signal (44a) to the audio noise

output, the first and second predictable noise sample signals (44a, 44b) being

synchronized in time by the synchronizer (45, microprocessor controller, such as cpu),

the compensation filter (26) compensating the second predictable noise sample signal

(44b) for the transfer function of the converter and outputting the second output noise

based on the compensation (see col.5 line 31-col.6 line 67); but Vaughn does not

explicitly teaches that the predictable noise sample signals are on a sample-by-sample.

However, Schneider teaches that the predictable noise sample signals are on a

sample-by-sample (see page 584 left column line 37- right column line 20).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to combine the teaching of Schneider into the teaching of Vaughn

and Hamabe to reduce the noise and to provide a sound environment for the purpose of

acquiring the desired audio sound quality.

As to claim 5, it is the method claim corresponding to apparatus claim 20. See

previous apparatus claim 20 for rejection.

As to claim 46, it is a sound system claim corresponding to apparatus claim 20. See

previous apparatus claim 20 for rejection.

Consider claim 21, Hamabe teaches that the microphone is capable of converting a

sound signal to an electrical analog signal, and wherein the apparatus comprises an

analog-to-digital converter coupled to the microphone for converting the electrical

analog signal into a digital signal (see fig.1b, (15a-15h) (see col. 5 line 32-col. 6 line 67).

Note discussion of claim 16 for a motivation to combine.

Consider claim 25 Vaughn and Hamabe does not teach the an apparatus of the noise

generator includes a maximum length sequence generator for generating the first

predictable digital noise signal that is substantially identical to the second predictable

digital noise signal on a sample-by-sample basis.

However, Schneider teaches that an apparatus (see fig.3) of the noise generator

includes a maximum length sequence generator for generating the first predictable

digital noise signal that is substantially identical to the second predictable digital noise

signal on a sample-by-sample basis (it is inherently the MLS generator generated the

predictable digital noise signal samples are identical in the same amount of time intense

of the maximum length and see pages 583-590).

Therefore, it would have been obvious to one of ordinary skill in the art at the time

the invention was made to combine the teaching of Schneider into the teaching of

Vaughn and Hamabe to reduce the noise and to provide a sound environment for the

purpose of acquiring the desired audio sound quality.

Consider claims 27, 32 they are essentially similar to claim 25 and are rejected for

the reason stated above apropos to claim 25.

As to claims 12-13, these are method claims of claims 25 and 27 and thus note the

rejections of claims 25 and 27, respectively.

As to claims 47-48, these are sound system claims of claims 25, 27 and thus note

the rejections of claims 25, 27, respectively.

15.   Claims 49-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Vaughn (US PAT. 5,233,665) as modified by Hamabe (US PAT. 5,426,703) as applied

to claims 16 and 43 above, and further in view of Roberts, R. A. et al., "Digital Signal

Processing," ISBN 0-201-16350-0, pp. 486-489.

Consider claims 49-50, Gardner teaches module for identifying a transfer

function performs (see fig.3, (42,44) and col.2 lines 7-22 and col.7 lines 1-60); Gardner

fails to teach that the transfer function performs an Auto Regressive Moving Average

(ARMA) to estimate the transfer function.

However, Roberts teaches that a transfer function performs an Auto Regressive

Moving Average (ARMA) to estimate the transfer function (see "Digital Signal

Processing," ISBN 0-201-16350-0, pp. 486-487).

Therefore, it would have been obvious to one of ordinary skill in the art at the time

the invention was made to combine the teaching of Roberts into the teaching of Gardner

and Hamabe to provide a sound environment for the purpose of acquiring the desired

audio sound quality for the market demand.

Response to Arguments

16.   Applicant's arguments with respect to claim1-5 and 7-50 have been considered

but are moot in view of the new ground(s) of rejection.

Conclusion

17.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure. Parkins (US PAT. 6,665,410) is cited to show other listening

device.

18.   Any response to this action should be mailed to:

        Mail Stop ____(explanation, e.g., Amendment or After-final, etc.)

        Commissioner for Patents
        P.O. Box 1450
        Alexandria, VA 22313-1450
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        (703) 872-9306
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Randolph Building
401 Dulany Street
Alexandria, VA 22314

Any inquiry concerning this communication or earlier communications from the examiner

should be directed to Lao, Lun-See whose telephone number is (571) 272-7501 The examiner

can normally be reached on Monday-Friday from 8:00 to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Chin Vivian, can be reached on (571) 272-7848.

Any inquiry of a general nature or relating to the status of this application or proceeding

should be directed to the Technology Center 2600 whose telephone number is (571) 272-2600.

Lao, Lun-See L.S.
Patent Examiner
US Patent and Trademark Office
Knox
571-272-7501
Date 03-21-2007

VIVIAN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600